

ABSTRACT OF THE DISCLOSURE

A water permeable electrode for electrochemical splitting of water having a light sensitive catalytic material layer which includes a light sensitive catalytic material and a semiconductor, a polymer electrolyte membrane layer, a metallic substrate layer disposed there between adjacent the polymer electrolyte membrane layer, and at least one photovoltaic device connected in series to the light sensitive catalytic material layer and disposed between the light sensitive catalytic material layer and the metallic substrate layer.